

# A Clinical Assessment Program to Evaluate the Safety of Patient Care

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## Abstract

The American Osteopathic Association's Clinical Assessment Program (AOA-CAP) provides a mechanism for osteopathic residency programs to measure and improve their quality of patient care. In CAP, current clinical practices are measured, and then compared, to evidence-based practice guidelines representing state-of-the-art professional standards, such as The National Committee on Quality Assurance (NCQA) Health Plan Employer Data and Information Set (HEDIS), Healthy People 2010 targets, and recommendations from the American Diabetes Association. In this program, data abstracted directly from patients' medical records are analyzed to determine the residents' performance as well as the impact and effectiveness of residency program treatment protocols in meeting standards of practice for certain clinical categories of patients. These categories are women's health, childhood immunizations, adult immunizations, low back pain, hypertension, coronary artery disease, and diabetes mellitus. All osteopathic family practice programs are required to participate in the AOA-CAP program as part of the accreditation process. This information is then used, when necessary, to modify residents' clinical behavior and teaching programs. Improvement is documented through re-evaluation. Our results thus far support the suggestion of NCQA that significant "quality gaps" exist. By reducing these quality gaps, which, according to NCQA, result in more than 57,000 U.S. deaths annually, patient safety is certainly being advanced. Through a platform of process sharing, the AOA-CAP provides specific information to residency program directors about how to improve the quality of patient care.

## Introduction

Health care providers in America have come under increasing pressure over the past decade to develop systems that assure the provision of safe patient care. The Institute of Medicine (IOM) crystallized concerns regarding patient safety with the 1999 report *To Err Is Human*, stating that between 48,000 and 98,000 deaths annually are due to medical error.<sup>1</sup> These concerns are increasing as health care becomes more costly to Americans; in 1999 Americans invested 1.1 trillion dollars in health care—13.5 percent of the Nation's gross domestic product (GDP). This figure is expected to rise to over 2 trillion dollars, or 16 percent of GDP by 2007.<sup>2</sup>

Although the IOM report focused on inpatient errors, it sparked a great amount of interest in medical errors in all types of health care delivery and helped

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE <b>2005</b>		2. REPORT TYPE <b>N/A</b>		3. DATES COVERED <b>-</b>	
4. TITLE AND SUBTITLE <b>A Clinical Assessment Program to Evaluate the Safety of Patient Care</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Agency for Healthcare Research and Quality 540 Gaither Road, Suite 2000 Rockville, MD 20850</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release, distribution unlimited</b>					
13. SUPPLEMENTARY NOTES <b>Published in Advances in Patient Safety: From Research to Implementation. Volumes 1-4, AHRQ Publication Nos. 050021 (1-4). February 2005. Agency for Healthcare Research and Quality, Rockville, MD. <a href="http://www.ahrq.gov/qual/advances/">http://www.ahrq.gov/qual/advances/</a></b>					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>UU</b>	18. NUMBER OF PAGES <b>14</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

set the taxonomy for patient safety. Safe patient care has been characterized as having three agendas: identifying what works (evidence-based), ensuring that the patient receives what works (delivery consistent with the evidence), and delivering it without errors.<sup>3</sup> The Agency for Healthcare Research and Quality (AHRQ) has defined a number of practices for patient safety through the publication of Evidence Report 43.<sup>4</sup> This report ranked practices to improve patient safety based on the strength of evidence behind the practice and began to shape the agenda for patient safety.

*To Err Is Human* focused primarily on errors of commission, such as wrong-site surgery. The AHRQ report expanded the patient safety agenda to include errors of omission, such as not providing perioperative beta-blockade to patients at risk for cardiac events, thus increasing the patient's risk of an adverse event and reducing the safety of their care.

When evaluating patient safety in the outpatient setting, especially when focusing on ambulatory care, the largest opportunities for improvement exist in delivering consistent evidenced-based care, thereby reducing the number of errors of omission. The National Committee for Quality Assurance (NCQA) has suggested that 42,000 to 79,000 deaths annually would be prevented if *all* Americans were receiving the same consistent care, in 10 categories, as those who are under treated by the country's top 10 health plans.<sup>5</sup> The categories are beta-blocker treatment, breast cancer screening, cervical cancer screening, cholesterol management, colorectal cancer screening, controlling high blood pressure, controlling diabetes, flu shots for adults over 65, prenatal care, and smoking cessation.

## **The American Osteopathic Association Clinical Assessment Program (AOA-CAP)**

The American Osteopathic Association (AOA) is a professional membership organization representing the approximately 52,000 osteopathic physicians (DOs) practicing in the United States and abroad. The AOA works to promote timely public health issues, encourages scientific research, and serves as the primary certifying body for all 20 osteopathic medical schools and hundreds of health care facilities across the nation. The AOA has been tracking the concerns raised by the IOM, AHRQ, and others regarding health care delivery in America, and has, through various committees and taskforces, developed its patient safety agenda as a response to these concerns. With a large percentage of its members involved in providing primary care to patients, the AOA's efforts have focused on methods to increase the safety of care delivered in the ambulatory environment. The AOA believes the largest opportunity for improvement in the ambulatory setting is in assuring evidenced-based medicine is delivered consistently and has explored methods that could be used to achieve this goal. Subsequently, the AOA made the commitment to develop a voluntary registry, called the Clinical Assessment Program (AOA-CAP), to serve as a quality improvement tool for physicians in training to evaluate the safety of their patient care in the ambulatory setting. This

type of program introduces physicians to active participation in quality improvement activities while still in their graduate medical education training. The AOA developed several guiding principals for the program, including:

- The use of information technology to drive the program. This resulted in the development of an AOA-supported, Web-based architecture providing key components to participating programs and physicians.
- The standardization of the AOA's measures to national efforts, including the NCQA Health Employer Data and Information Set (HEDIS) measures, Center for Medicare and Medicaid Services (CMS) Doctors Office Quality Initiative (DOQ), and Joint Commission on Accreditation of Healthcare Organizations (JCAHO) core measures.
- The development of a tool to provide osteopathic residency programs—and, eventually practicing physicians—with a method of measuring the quality and safety of care they provide to their patients using evidence-based standards. These tools are organized around clinical conditions, such as diabetes mellitus or hypertension, as sets of measures pertinent to the conditions.
- The incorporation of the process of continuous quality improvement into graduate medical education and the practice of osteopathic medicine.
- The inclusion, in pertinent measure sets, of the frequency of a documented osteopathic musculoskeletal exam.

## **Increasing participation**

The AOA has facilitated the development of the AOA-CAP to evaluate safety through a pilot project as well as investments in information technology, epidemiology and quality improvement. The CAP has been developed within family practice and internal medicine residency programs and will be offered to practicing primary care physicians in 2005.

The development of the measure sets has been guided by a steering committee composed of the following groups:

- American Osteopathic Association (AOA)
- American College of Osteopathic Family Physicians (ACOFP)
- American Academy of Osteopathy (AAO)
- American College of Osteopathic Internists (ACOI)

The steering committee is responsible for assuring the measure sets are consistent with current evidence-based care, and is also responsible for oversight of indicator development and report format.

After incorporating all recommendations into the measure sets, a pilot project of the AOA-CAP was initiated in 1999. Four clinical conditions—diabetes, women’s health screening, childhood immunizations, and osteopathic examination of the spine—were evaluated, encompassing more than 30 indicators. The pilot project was offered to all 143 family practice residency programs accredited by the American College of Osteopathic Family Physicians (ACOFP). Twenty-seven programs indicated an intention to participate; however, the final number participating in the program was 11, representing family practice residency programs and 1,541 patients.

The pilot project, completed in 2001, noted a variation in performance between residency programs, and identified opportunities to improve care in participating family practice programs. The ability of AOA-CAP to collect consistent data from multiple clinical programs and provide information regarding performance back to those programs was also realized.

Evaluation of the results of the pilot project demonstrated that performance, using the NCQA HEDIS as a guide, was similar to national averages in the four clinical entities.

The AOA, through its Bureau of Osteopathic Clinical Education and Research (BOCER), collaborated with the ACOFP to explore methods of increasing participation in the AOA-CAP by family practice residency programs. Acknowledging low participation and recognizing the importance of teaching continuous quality improvement to residents, the ACOFP Committee on Evaluation and Education recommended mandatory participation in the AOA-CAP program as a part of the accreditation process for AOA-approved family practice residency programs. This step was approved in July 2003. The ACOFP Committee on Evaluation and Education also required the selection of one of two clinical AOA-CAP projects during 2003–04 and 2004–05. (The clinical areas of focus for these residency programs during these two years were diabetes mellitus and low back pain.) As a result of this effort, program participation in the first two of three data collection periods during academic year 2003–04 increased from the 11 programs in the pilot project to more than 40.

## **Evolving core competencies in the practice of medicine**

As the IOM and others have begun to identify deficiencies in the current delivery of health care, a model of core competencies is beginning to emerge from employer groups and accreditation agencies. This model is best demonstrated in the Bridges to Excellence initiative supported by the NCQA, General Electric, and other employers.<sup>6</sup> The model includes consistent use of evidenced-based medicine, understanding the concept of population or disease management using systematic methods of improving care within a specific clinical entity, and providing a continuum of care for patients with chronic disease.

The AOA-CAP provides residency programs with the framework for development of these competencies. It achieves this by serving as a method of measuring the residency programs' compliance with evidence-based standards of care in the management of patients with chronic diseases such as hypertension, diabetes mellitus, osteoporosis, and coronary artery disease. The CAP also provides information on frequency of preventive interventions including immunizations and cancer screening.

## **How the AOA-CAP works**

With the engagement of all family practice residency programs in the current AOA-CAP brought about by mandatory participation, the number of clinical entities covered was expanded to seven clinical conditions (with more than 38 indicators): diabetes mellitus, coronary artery disease, women's health, low back pain, adult immunizations, hypertension, and childhood immunizations.

Presently, the program is a retrospective evaluation of care delivery within each of these measure sets, which has a well-developed data dictionary consistent with those in use by both the NCQA HEDIS initiative and the JCAHO Core Measure initiative.<sup>7</sup> Sample size for each clinical entity has been defined by using either population estimates or pre-and postintervention sample frames. Each participating site is provided standardized materials to use for institutional review board submission, with the assumption that the project will be submitted for an expedited review as a quality improvement project. Reports are generated for each program using indicator constructs similar to those used by external bodies, including both the NCQA and the JCAHO, with the flexibility to generate indicators as determined by the steering committee. All 143 programs with more than 900 residents are expected to participate by the end of the 2005 academic year.

## **Project description**

AOA-CAP is designed to be an ongoing program in clinical quality improvement. Residency programs have the ability to register their programs through the AOA-CAP Web site, accessed through DO-Online,<sup>8</sup> which is the primary method of communication between residency programs, the AOA, and the principal investigators for AOA-CAP.

In AOA-CAP, performance is measured by retrospective abstraction of required data elements from patients' medical records by residents associated with the residency program and trained as abstractors. Data elements include demographic information (e.g., patient's age, gender, etc.) and clinical information. Clinical indicators selected for measurement represent evidence-based clinical practice standards derived from large randomized controlled clinical trials, single controlled observational studies, or expert consensus. Subject to the specific measurement set, abstraction time per record requires 10–20 minutes. Patient confidentiality is assured, as no patient-identifiable data are collected. The elements of data collected by the AOA-CAP meet the Health Insurance Portability and Accountability Act of 1996 (HIPAA) privacy

regulations for “de-identification of protected health information” set forth in 45 CFR Sec. 164.514 (b)(2).

Residents are provided with comprehensive data dictionaries and trained in data abstraction using an online tutorial. Data dictionaries provide abstractors with specific procedures and definitions to ensure the uniformity and reliability of abstracted data. Each data dictionary has a general description of clinical conditions in the measurement set; information necessary to precisely select the medical records to be abstracted; and detailed background, definitions, and instructions regarding each data element to be abstracted. Data may be abstracted onto paper forms and later transferred to an online data-entry tool, or abstracted directly from the medical record to the online data-entry tool for transmission to the AOA for analysis.

AOA-CAP provides each participating residency program a near real-time report of current clinical practices (15–30 days following the close of a data collection period). The performance score for each clinical indicator will establish a benchmark against which residencies can compare progress in future studies, compare performance to national standards (e.g., NCQA’s HEDIS measures), and compare their performance to other residency programs.

The reports generated by the AOA-CAP will help to readily identify clinical practices that need improvement in quality and intervention, provide a guide to curriculum modifications, serve as an adjunct to teaching tools, and offer a stimulus to faculty and residents to continuously improve.

## **Benefits to family practice residency programs**

The AOA-CAP offers many benefits to physicians in training. With growing concerns regarding patient safety, specifically regarding errors of omission in the ambulatory setting, the AOA-CAP provides a measurement set to help focus these residents on improving patient care and exposing them to health care quality improvement techniques, which traditional medical education does not generally deliver. By using the AOA-CAP to identify opportunities to improve care and then developing systematic methods of capitalizing on these opportunities, residents can develop competency in population-based medicine and the dynamics of disease or care management of patient groups with chronic disease. Thus, residents will become familiar with evolving market-based approaches to quality improvement, such as the Bridges to Excellence program. This program, which is implemented in several cities, rewards physicians who demonstrate good outcomes in diabetic care.<sup>6</sup> In addition, the CAP provides an opportunity to better understand health services research, including aspects such as the function of institutional review boards; the different dimensions of health care performance measurement, including structure, process and outcomes; and the tools needed to quantify each of these dimensions.

## **A quality improvement tool**

The AOA-CAP is a tool that provides a consistent method of collecting data on health care delivery within ACOFP-approved residency programs, and can be used to identify opportunity gaps in care delivery. Experience with the AOA-CAP pilot project demonstrated a great deal of interest from participating programs in understanding why some programs had better performance. The AOA sponsored a series of teleconferences following the pilot project, highlighting programs identified as “best practices” in each clinical category. The teleconferences allowed the programs to share their processes of care around specific indicators. Remeasurement in two programs that contributed diabetes mellitus data to both the AOA-CAP pilot project and one of the first two data collection periods during academic year 2003–04 showed significant improvement in most indicators of care. Pooled data from both programs demonstrated a reduction in poorly controlled diabetic patients having a HgbA1c > 9.5 percent, from 32.10 percent to 7.02 percent ( $P < 0.001$ ); an increase in influenza vaccinations, from 14.81 percent to 36.84 percent ( $P = 0.003$ ); and an increase in use of angiotension converting enzyme inhibitors in eligible diabetics with albuminuria, from 72.73 percent to 100 percent ( $P < 0.001$ ). The AOA-CAP can serve patient safety as a quality improvement tool and provide residents in training with the framework for understanding the model of continuous quality improvement.

## **Initial findings**

### **Diabetes care in programs participating in the first two data collection periods**

Diabetes was selected as an initial condition for participating residencies because it is a serious chronic disorder affecting 6.1 percent of Americans and is a leading contributor to death and disability. Diabetes complications serve as the leading cause of new cases of adult blindness; account for about one-third of all cases of end-stage renal disease; represent the leading cause of nontraumatic amputations (54,000 per year); and serve as a major contributor to macrovascular complications that include heart attack, stroke, and other life-threatening diseases.<sup>9</sup>

The Diabetes Control and Complications Trial (DCCT) and the United Kingdom Prospective Diabetes Study (UKPDS) were randomized clinical trials that have facilitated recent changes in the recommended treatment of diabetes. The DCCT and UKPDS, along with other studies, have demonstrated that tight control of glucose levels, blood pressure, and cholesterol levels can delay or reduce the onset of microvascular complications of diabetes.<sup>10–14</sup> Based on the support from these studies, the American Diabetes Association (ADA) has developed aggressive clinical practice recommendations for the diagnosis and treatment of diabetes. These recommendations, which are updated annually, were used in generating the AOA-CAP diabetes mellitus report.



The list below covers the quality indicators of diabetes care in the AOA-CAP that are endorsed by the AOA-CAP Steering Committee:

- Glycosylated hemoglobin (HgbA1c) testing and degree of control of HgbA1c levels.
- Dilated retinal examination in past year recommended and performed by qualified specialists.
- Microalbuminuria screening conducted, and if present, appropriate treatment with ACE Inhibitors or angiotensin receptor blockers (ARBs).
- Lipid levels taken in past year and LDL level recorded and controlled.
- Blood pressure levels recorded and control of HTN in diabetic patients.
- Foot examinations in eligible diabetic patients.
- Recommended immunizations received.
- Osteopathic assessment performed.

## **Comparison data**

The diabetes mellitus report displays the following: data from the participating program, the average measure performance of all ACOFP accredited programs contributing data from the same time period, and two sources of external comparative data. The first comparative dataset is from the National Health and Nutrition Examination Survey (NHANES 1999–2000), which provides an estimate of diabetic prevalence and control on a national basis.<sup>15</sup> The second comparative database is NCQA's HEDIS, a survey of managed care organizations in the country.<sup>5</sup> This information is provided to give a valid reference for how a program is performing in relation to external benchmarks. Goals for each program are set with the “best care for patients” under consideration.

## **Results**

The following tables provide an example of what residency programs receive during participation in the AOA-CAP. The information provided here includes all programs contributing data to the first two data collection periods covering care provided in calendar year 2002. The format is designed to provide participating programs information on their program performance along with comparative data. The measures provided are based on evidence-based practice guidelines derived from large, randomized clinical trials, scientifically designed observational studies, or expert consensus.

Table 1 displays demographic information regarding those eligible diabetic patients having their medical record abstracted during the study period along with comparative data from NHANES and HEDIS. The study period for this report

**Table 1. Patient demographics; data collection periods 1 and 2**

<b>Program Identifier</b>	<b>ABC</b>	<b>Study period: 2002</b>
	<b>(Example program)</b>	<b>All CAP programs</b>
Cases abstracted (#)	<b>37</b>	<b>1486</b>
Average patient age (#)	<b>56.2</b>	<b>56.8</b>
Patient age range	<b>24–86</b>	<b>19–89</b>
Gender-male (%)	<b>43.2%</b>	<b>40.5%</b>
Diabetics on insulin (%)	<b>24.3%</b>	<b>27.0%</b>
<b>Comparison performance data</b>		
Study period	<b>NHANES</b>	<b>1999–2000</b>
Average patient age	<b>NHANES</b>	<b>59.3</b>
Diabetics on insulin	<b>NHANES</b>	<b>27.4%</b>

was the calendar year 2002. The AOA-CAP participating programs have demographics fairly similar to those from national representative samples, as the AOA-CAP data featured a mean age of 56.8 years and the NHANES data featured a mean age of 59.3 years. Additionally, the percentages of diabetics receiving insulin are almost identical in the two studies.

Table 2 displays glycemic control for a representative program, listing figures for the percentage of patients having good glycemic control (HgbA1c < 7 percent), the percentage having glycemic control in need of focused treatment action (HgbA1c > 8 percent), and the percentage having poor glycemic control (HgbA1c > 9.5 percent). Normal (6 percent or less) or near normal (7 percent or less) HgbA1c levels are associated with reduced vascular complications associated with the disease. Levels above 8 percent are considered “poor control,” and levels above 9.5 percent are considered “uncontrolled.” Comparison of participating programs with nationally representative samples shows tighter glycemic control at those programs contributing to AOA-CAP, with trends toward lower percentages of patients with HgbA1c greater than 9.5 percent and toward higher percentages of patients with HgbA1c less than 7.0 percent.

Table 3 demonstrates performance in preventive care; documented screenings, including eye and foot examinations; and immunizations given to diabetic patients in all CAP programs and at the program used as an example. The eye examination portion of this report provides an illustration into several unique aspects of the AOA-CAP reports. First, by inclusion of the frequency of recommendation of eye examination, the patient-physician modifiable barriers to performance can begin to be separated. In addition, the AOA-CAP has the ability to construct performance measures according to external or internal dictates. The eye exam measure consistent with HEDIS definitions (as represented in the row named “done HEDIS”) allows accurate comparison to the NCQA’s HEDIS measure. The eye exam on all patients (represented by the row named done all) was constructed differently, allowing the steering committee to evaluate all patients having diabetes mellitus different aspects of preventive care delivery.

Measures that do not have commonly accepted constructs, such as the annual comprehensive foot examination, are developed from consensus guidelines, such

**Table 2. Glycosylated hemoglobin (HgbA1c) testing and level of control, data collection periods 1 and 2**

Program Identifier	ABC			Study as of 2002	
	(Example program)			All CAP programs	
	Mean	LCL	UCL	Mean	Pgm range
HgbA1c testing done (%)	<b>94.6%</b>	87.3%	100.0%	91.5%	75–100
<b>Glycemic control</b>					
HgbA1c < 7.0%	<b>48.6%</b>	32.0%	65.1%	41.5%	0–67
HgbA1c > 8.0%	<b>28.6%</b>	13.6%	43.5%	31.8%	13–60
HgbA1c > 9.5%	<b>20.0%</b>	6.7%	33.3%	14.9%	0–40
<b>Comparison performance data</b>					
HgbA1c (done)	HEDIS			2002	82.6%
HgbA1c > 9.5% (control)	HEDIS			2002	33.9%
HgbA1c < 7.0% (control)	NHANES			1999–2000	37.0%
HgbA1c > 8.0% (control)	NHANES			1999–2000	37.2%

LCL = Lower Control Limit

UCL = Upper Control Limit

**Table 3. Preventive care and evaluation, data collection periods 1 and 2**

Program Identifier	ABC			Study period: 2002	
	(Example program)			All CAP programs	
	Mean	LCL	UCL	Mean	Program range
<b>Eye care</b>					
Eye exam (recommended)	<b>62.2%</b>	46.5%	77.8%	55.7%	3.6–100
Eye exam (done HEDIS)	<b>48.6%</b>	32.5%	64.8%	42.4%	3.6–100
Eye exam (done all)	<b>40.5%</b>	24.7%	56.4%	36.1%	3–100
<b>Foot care</b>					
Examination (done)	<b>56.8%</b>	40.8%	72.7%	55.7%	0–100
<b>Immunizations</b>					
Pneumovax (given)	<b>13.5%</b>	2.5%	24.5%	31.6%	0–100
Influenza vax (given)	<b>32.4%</b>	17.3%	47.5%	38.6%	0–100
<b>Comparison</b>					
Eye exam (done)	HEDIS			Yr 2002	51.7%

LCL = Lower Control Limit

UCL = Upper Control Limit

as those of the ADA. The ADA recommends that such an examination include an assessment of the following: protective sensation, foot structure and biomechanics, vascular status, and skin integrity.

Influenza vaccine is recommended for persons at increased risk of complications from an acute respiratory illness. Diabetic patients fall into this category. Similarly, high-risk patients should receive periodic Pneumococcal vaccination. Table 3 also displays performance rates for these two clinical indicators.

Table 4 demonstrates control of hypertension in hypertensive diabetics using the JNC VII standard of less than 130/80 mm Hg.<sup>16</sup> This standard was published during the year following data collection (2003). Control to this blood pressure provides a stretch goal for programs. Data from the NHANES study suggest that only 35.8 percent of all diabetics had blood pressures in the recommended range.

**Table 4. Control of hypertension, data collection periods 1 and 2**

Program Identifier	ABC			Study period: 2002	
	(Example program)			All CAP programs	
	Mean	LCL	UCL	Mean	Program range
<b>Eye care</b>					
Diabetics with Hypertension (HTN)	70.3%	55.5%	85.0%	71.3%	42–100
Diabetics with controlled HTN	30.8%	13.0%	48.5%	24.4%	0–47
Diabetics with controlled HTN on ACEI	85.7%	70.1%	100.0%	87.0%	53–100
<b>Comparison performance data</b>					
Diabetics with Hypertension (HTN)	NHANES			1999–2000	51.4%

LCL = Lower Control Limit

UCL = Upper Control Limit

## Conclusions

The AOA-CAP initiative has demonstrated that a health care professional membership organization representing practicing osteopathic physicians can develop and implement a tool to measure and improve ambulatory patient care safety. The AOA's high level of commitment to improving ambulatory patient safety and confronting criticisms of the current health care delivery structure has resulted in the development of a quality improvement program geared to the graduate medical education environment.

The implementation of the AOA-CAP has been enlightening in terms of the challenges it presented. After surmounting information-systems and methodologic issues during the pilot project in 1999–2000, the steering committee was perplexed by the low level of engagement with family practice residency programs. The 8-percent enrollment rate of family practice programs during the pilot project reflected a misunderstanding of registry programs' ability to improve

care and of the number of competing interests vying for residency program directors' attention. In an effort to ensure that the AOA-CAP program would receive proper commitment, leadership at the ACOFP implemented the mandatory participation requirement, thus assuring that ambulatory patient safety is a priority for osteopathic family practice training programs.

The two family practice programs that participated in both the pilot project and one of the first two data collection periods of the current project have demonstrated that the process of care measured in diabetes mellitus is, to some extent, modifiable by the programs. This has been reinforced by findings from the NCQA State of Managed Care report that has demonstrated improvement in the process measures tracked by HEDIS.<sup>5</sup> Although the findings may be biased by the fact that the programs were volunteers in the pilot project, it is clear that improvement of measured process of care indicators occurred.

On the whole, results from the programs participating in the first two data collection periods of the current AOA-CAP program are fairly similar to those found in national studies, including NCQA, which is representative of patients served by managed care organizations, and NHANES, which is a nationally representative study of diabetic patients. Although there is no audit function to the AOA-CAP, the similarities of the findings to national studies suggest that the AOA-CAP data are both reliable and valid.

## **Future directions**

As the AOA-CAP continues to be refined and as more programs become engaged in the patient safety improvement loop, future directions of the program are being developed. Areas of future attention will include:

**Sharing processes of care between residency programs.** The variation in processes of care seen at participating family practice programs provides an opportunity to examine the differences in operations between programs. Those operational differences that result in higher performance can be labeled “best practices” and shared with other family practice programs in an effort to accelerate improvement. This sharing follows the Institute for Healthcare Improvement model that has proven successful in implementing institutional change in health care providers.<sup>17</sup> Models of sharing can include highlighting “best practice” programs at regional or national meetings and sponsoring teleconferences that provide an opportunity to share results and practice.

**Use of the registry for health services research.** The registry provides a window into delivery of care at participating programs. Physician or patient factors can drive variance in performance. To determine the most effective method of improving care it is necessary to understand where the opportunity gap exists. The model for residents using the registry to answer these health-services research questions has been demonstrated through a publication from the pilot project that evaluated barriers to adequate control of hypertension.<sup>18</sup> There also is an opportunity to use the network evolving around the AOA-CAP as an osteopathic primary care research network.

**Expansion of the program to practicing physicians.** With increasing demands to demonstrate performance and evolving pay-for-performance initiatives, such as Bridges to Excellence, practicing physicians may find the AOA-CAP an important tool to fulfill such needs. The program could be changed to fit the requirements of external users, such as the Centers of Medicaid and Medicare Services or other payers. The AOA-CAP is one method of addressing the difficult questions raised by the various IOM reports regarding patient safety and improving quality care.

## Acknowledgments

The Clinical Assessment Program (CAP) is supported by the American Osteopathic Association and the American Osteopathic Foundation.

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